

Dynamics of the NOx Allowance Market

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What is Natsource LLC?

- Over-the-Counter commodities brokerage house
- Focused on energy related products
 - Natural Gas
 - Coal
 - Electricity
 - Environmental Markets
- Client base of over 600 major firms
 - Utilities, Power marketers and IPPs
 - Large industrials



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NOx “Currency” Definitions

- Offset markets
 - Permanent emission reduction credits
- Open markets (Limited areas of applicability)
 - Verified emission reductions
 - Discrete emission reductions
- Closed or “Cap & Trade” markets
 - NOx Allowances – OTC and SIP/126
 - Reclaim



What is Cap & Trade?

- Novel compliance regime unlike Command/Control
 - Compliance means: Allowances held > Emissions.
 - Unit specific actions or rates are not mandated
- Best suited for regional problems
- Four steps to achieve emissions reduction goal
 - Set emissions cap
 - Allocate allowances to affected units
 - Measure emissions at unit level
 - Ensure that allowances held for unit cover its emissions

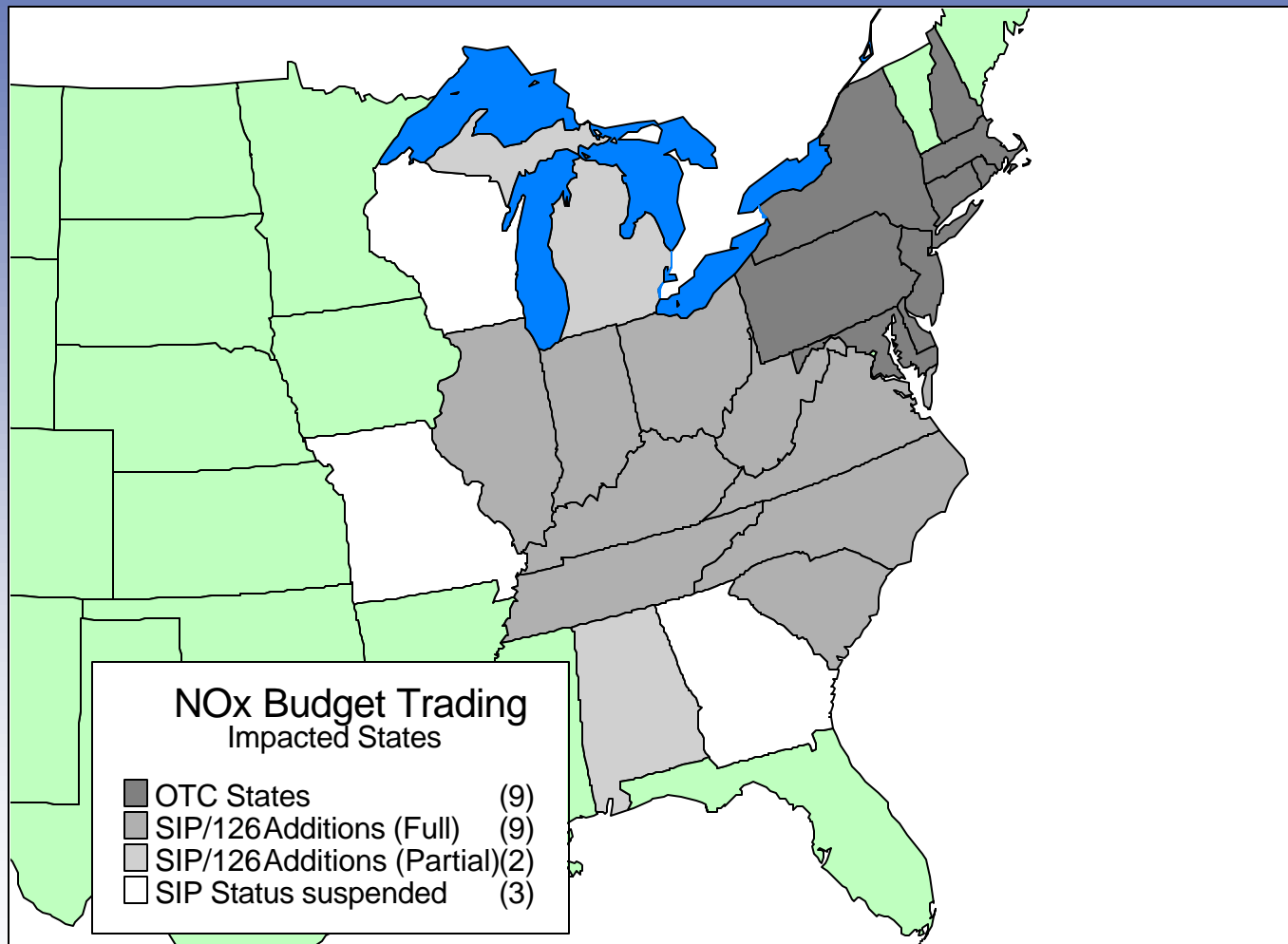


NOx Trading Regimes

- OTC operating in Northeast 1999-2002
- New round of control regimes responding to issue of interstate transport
 - Section 110 (“SIP Call”) mandates a state response
 - Section 126 is direct regulation of Sources by Feds
- Programs will start in 2003 and 2004
 - Current OTC states will begin in 2003
 - All others will start in 2004 under either 126 or SIP



Northeast NOx Trading Area Growing



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NO_x Emissions Allowance

The authorization to emit one ton of oxides of nitrogen into the atmosphere from May 1 through September 30

- Standardized, issued in vintage years
- Trade-able, usable by sources under any EPA approved NO_x budget trading program
- Bankable, unused allowances can be carried forward with some restrictions under PFC



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SIP NOx Market Participants

- Sources
 - Electricity generators: Utilities, IPPs...
 - Paper mills
 - Chemical plants and refineries
 - Steel mills
 - Cement kilns
- Suppliers
 - Control equipment vendors
- Financial players
 - Trading concerns
 - Banks and Insurance companies



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General NOx Market Drivers

- Cost Based Drivers
 - Fuel Switching and Co-Firing
 - Combustion Tuning
 - Post-Combustion Controls - SNCR, SCR
- Dispatch
- Statutory/Regulatory Drivers
 - Control levels in regulation
 - Progressive Flow Control
 - Finalization of state regulations and allocations
- Market Supply/Demand Balance



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NOx Market Conventions

- Standard trading lot is 50 or 100 tons.
- Vintages often trade together as streams.
 - (i.e. 50 tons v2003-04 is 50 tons of each)
- Normal bid/ask spread:
 - \$25-100 for OTC (3%-12% of underlying)
 - \$75-250 for early SIP Call (1%-5% of underlying)
 - \$0.50-3.00 for SO₂ (0.2%-1.5% of underlying)

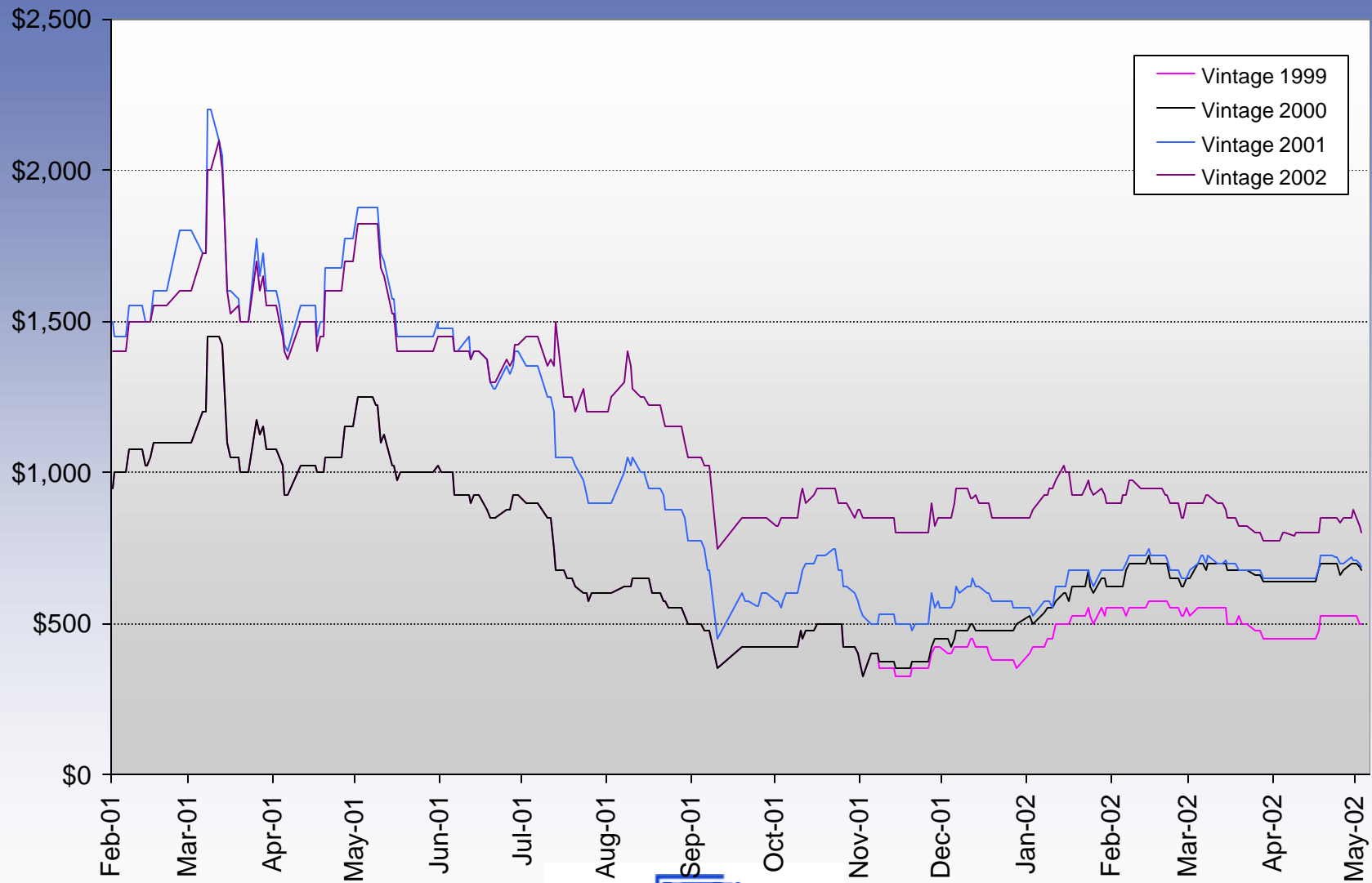


Emissions Transaction Structures

- Immediate Settlement
- Forward Settlement
- Options (European style physically settled)
 - Calls (right to purchase at a particular price)
 - Puts (right to sell at a particular price)
 - Composite structures: Spreads, Straddles...
- Vintage Swaps, Loans
- Indexed transactions
- Interpollutant swaps
- Bundling/swapping with power, coal, etc.



OTC NOx Allowance Prices



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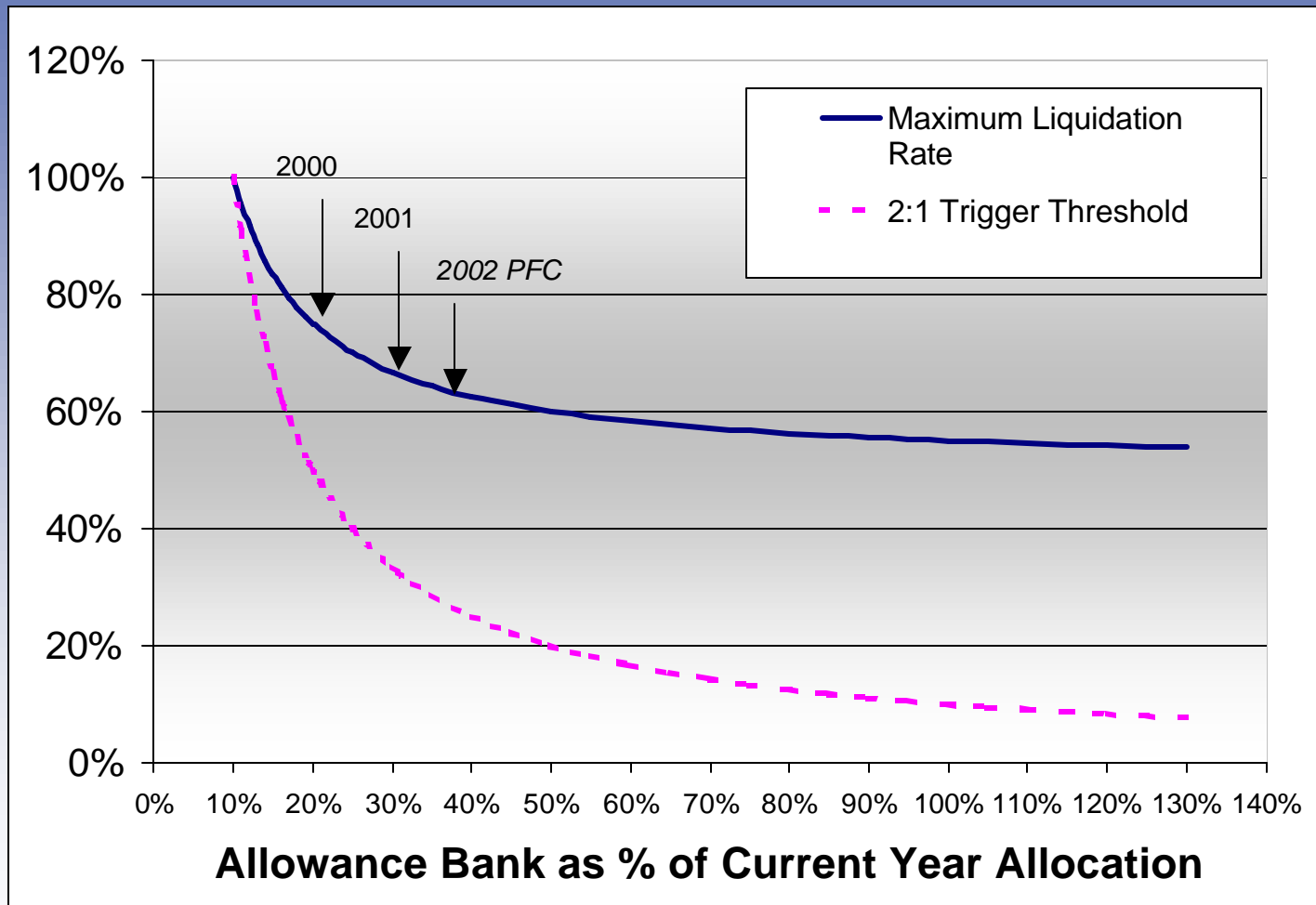
Banked Allowances May be Discounted

- Unused allowances generally bank forward.
- But, if large bank accumulates “PFC” is in effect:
 - “Large” is a bank >10% of annual allocation
 - PFC discounting is applied at the annual true up to allowances actually being used for compliance
- SIP/126 have identical PFC provisions to OTC

Allowance vintage makes a big difference.

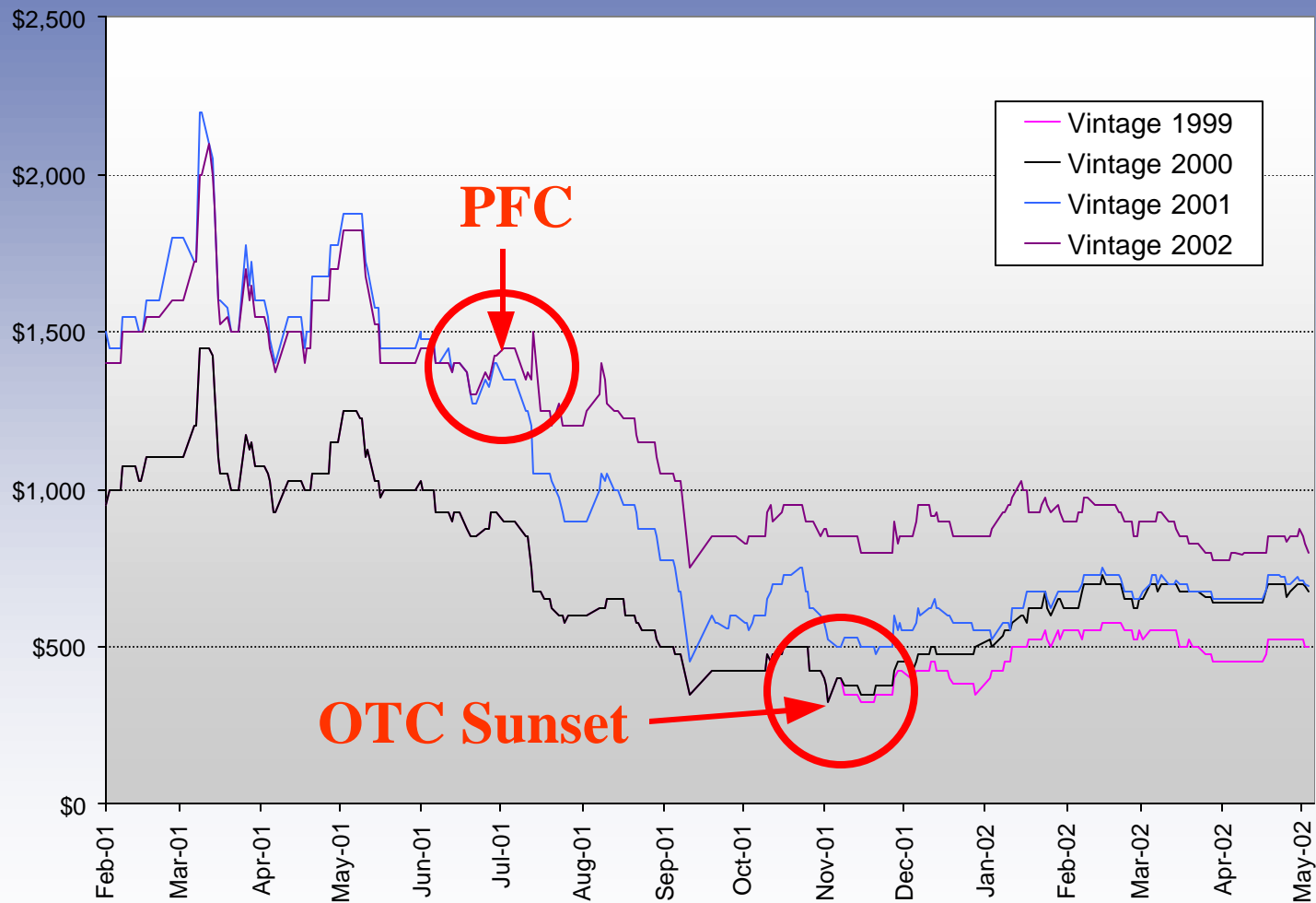


Bank Drives PFC Compliance Value



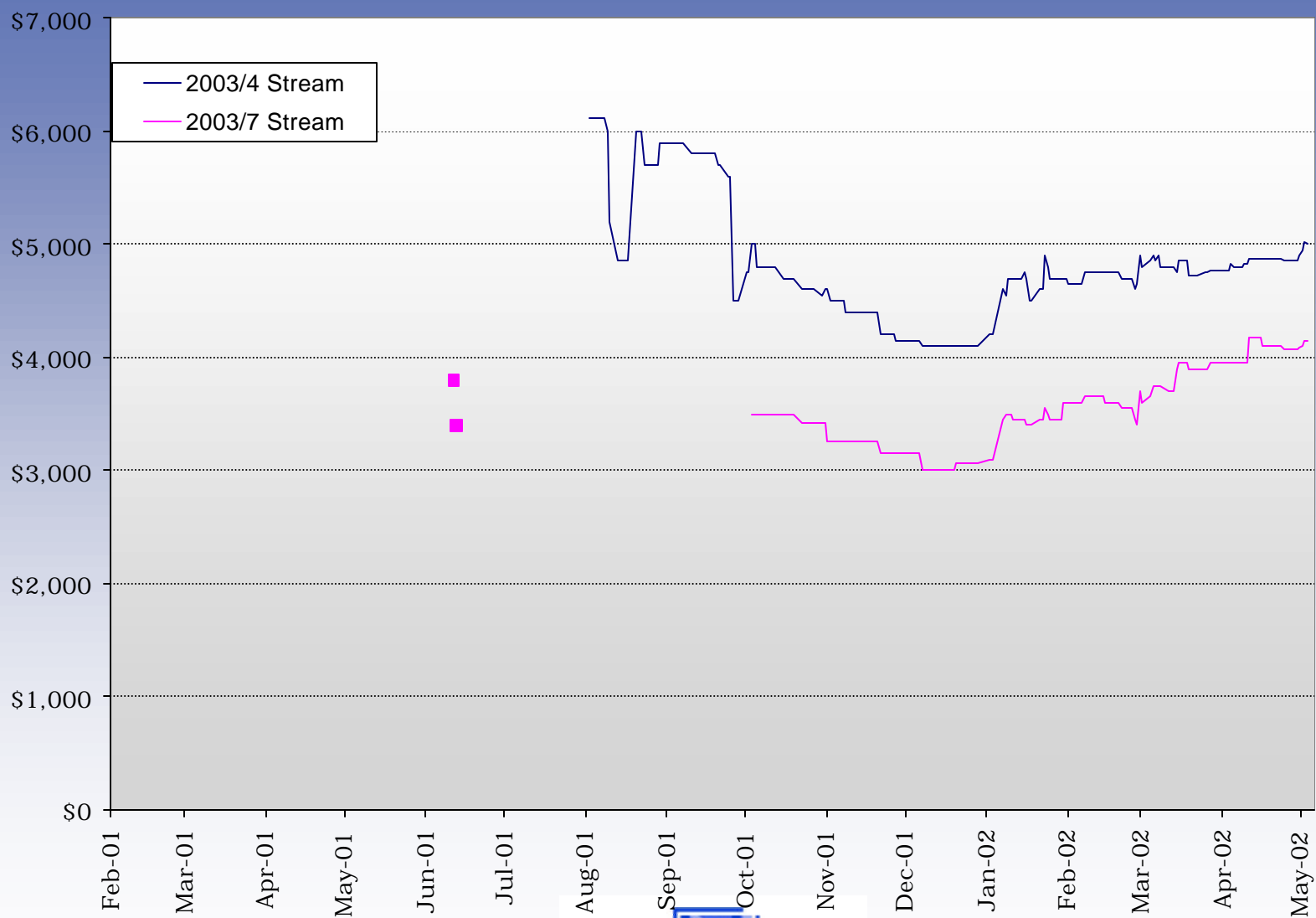
As overhang grows, banked allowances lose *compliance* value.

...Compliance Value Drives Price



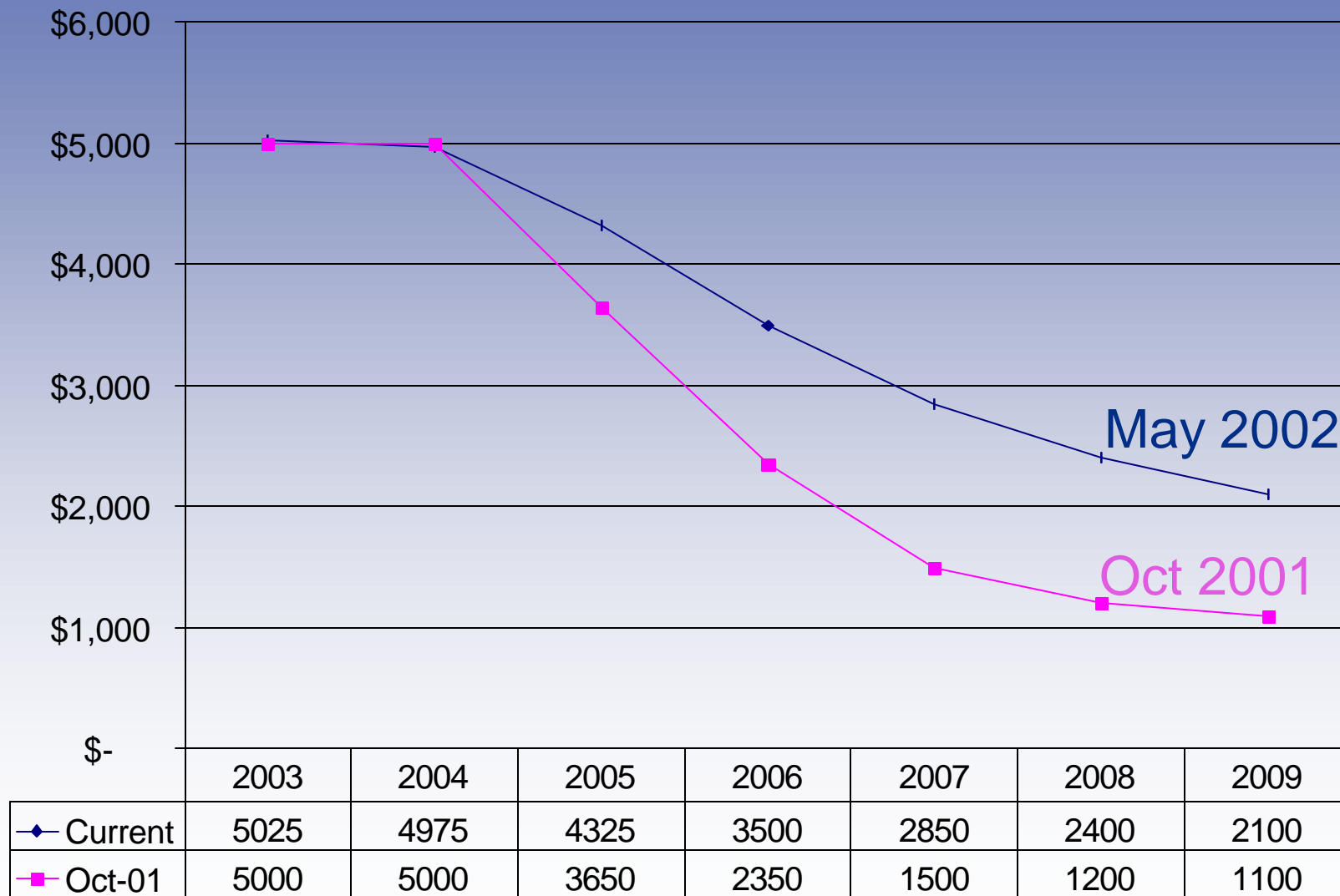
SIP Call NOx Mid-Market Close

(\$/Allowance immediate settlement)



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Forward Curve Has Shifted

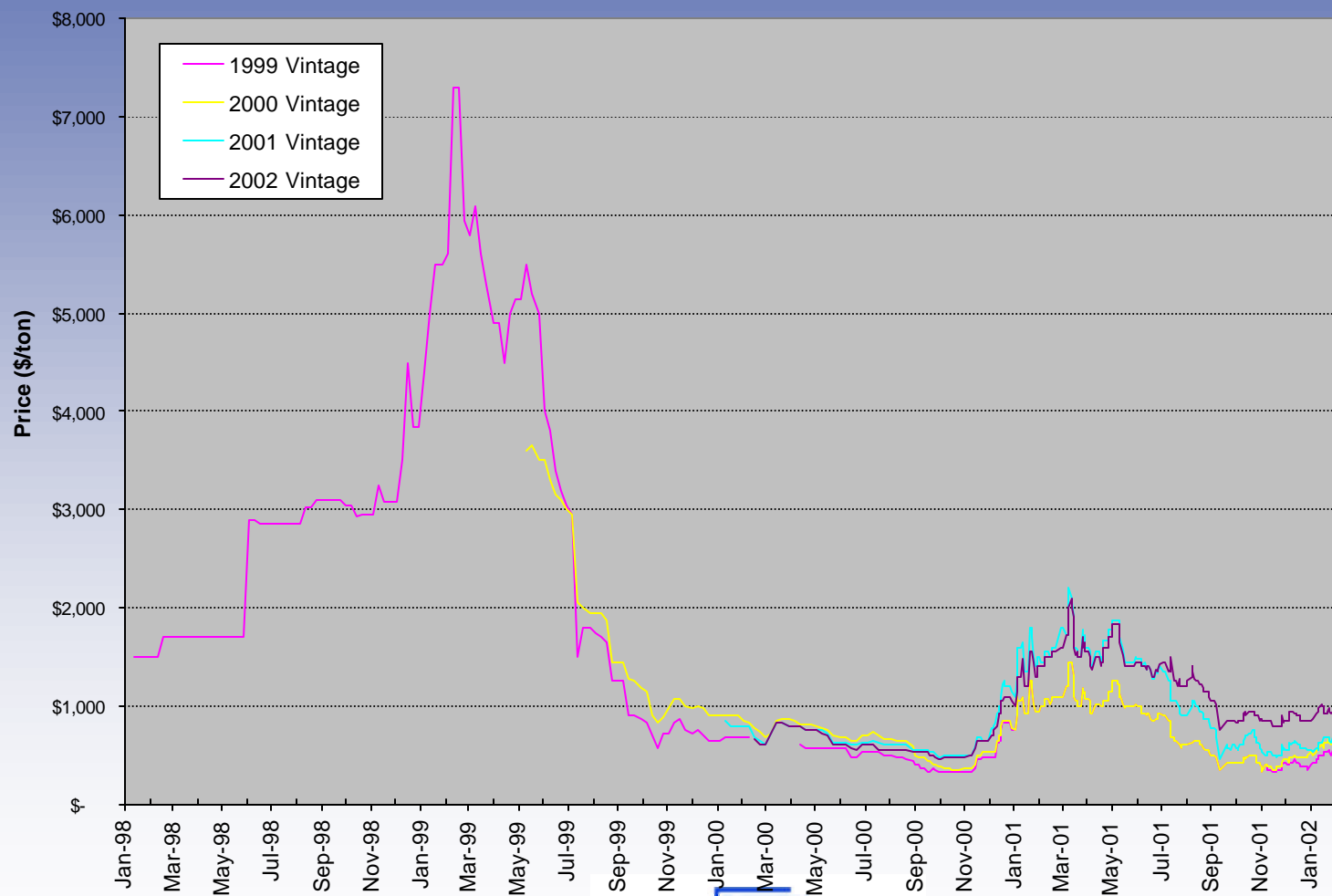


Full OTC NOx Price History



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NOx Allowance Mid-Market Prices



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Basic Structures to Consider

- Natural Long Position:
 - **Allowance sale, Call sale** or Put purchase
- Natural Short Position:
 - **Put Sale**, Call Purchase or Allowance purchase
- Either Long or Short:
 - Allowance Loans
 - Earn interest on Allowance holdings prior to use
 - Forward transactions:
 - Lock in prices at current levels

Optimization Problem in 2002

- EPA deducts spot vintage first
- Convertibility of OTC into CSP
 - Intended to ease transition
 - CSP allowances valid for two years
 - Expect conversion at 5:1 (vary by state)
- V1999 not convertible to CSP
- V2000 not convertible to CSP in PA

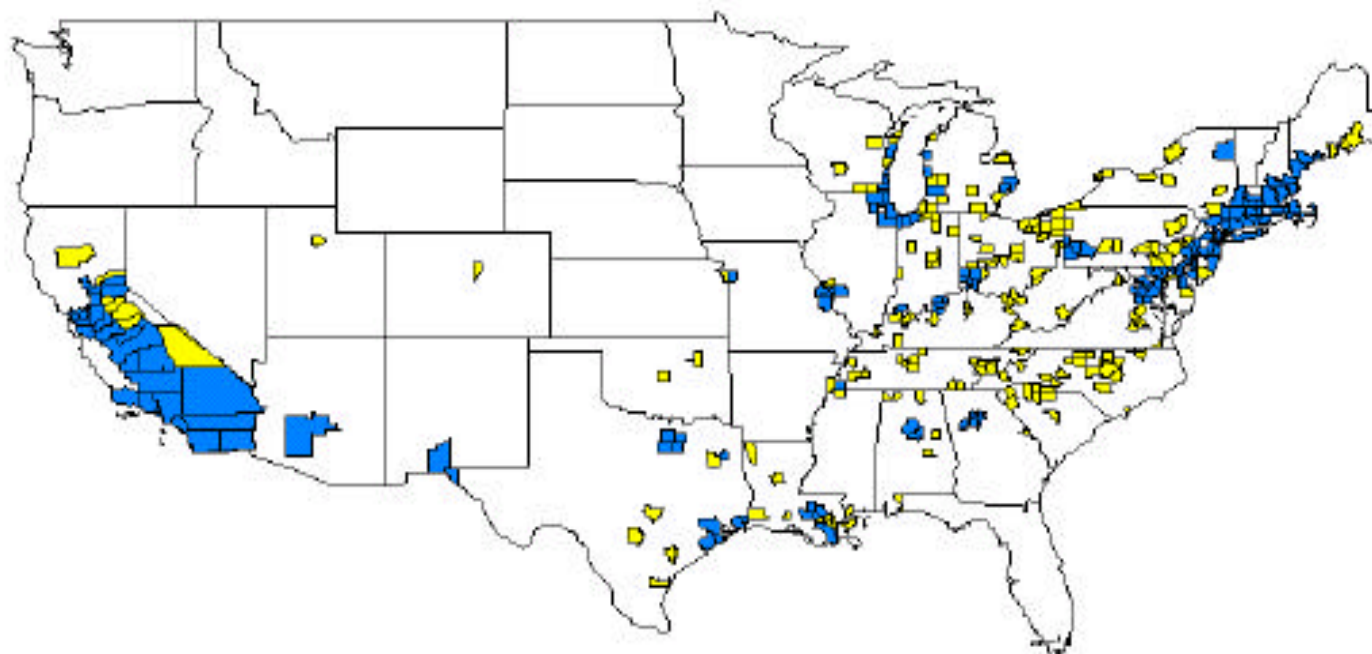


Future Issues Beyond SIP

- 8-Hour Standard
- PM 2.5
- Clear Skies/4-Pollutant Plan
- Regional Haze Rule



Counties Not Meeting EPA's Ozone Proposal Standard (8 hour, average 3rd maximum, 0.08 ppm)



■ Counties with control programs in place under the current standard.

■ New counties that will not meet EPA's proposal standard.

Source: 1993-1995 data



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